

**MINIMIZING HUMAN HEALTH AND ECOLOGICAL RISKS POSED BY  
MERCURY CONTAMINATION IN THE GULF OF MEXICO:  
REGIONAL DATABASE, RESEARCH, MODELING, AND REGIONAL COORDINATION**

**Needs and Opportunities identified by Gulf States in the Water Quality White Paper**

- ◆ “Monitoring of mercury and other toxics in estuarine and marine fish – It is known that several species of estuarine and marine fish have locally unacceptably high mercury body burdens; however, the data may be of insufficient quality, quantity and spatial extent to fully protect public health.”
- ◆ “Assistance in developing modeling tools to relate watershed wide land use activities to water quality problems, particularly for nonpoint source control.”
- ◆ “A continuing effort to address sources of toxic contamination in Gulf and estuarine fish species from local and non-local sources.”
- ◆ “Coordination among Federal and State partners in the collection of data to prevent duplication of effort and promote standardization and comparability of methods and data.”
- ◆ “... compilation of data into a Gulf of Mexico database, with web access to increase data and information sharing ...”

**Federal Response:** The Federal Workgroup proposes three actions to address the issue of mercury contamination in the Gulf of Mexico: incorporating the results of a survey of mercury in finfish into an existing EPA database of mercury in edible seafood tissues; integrating and leveraging NOAA research and modeling capabilities; and increasing coordination of Federal and state mercury research activities.

**Regional Database:** The EPA Gulf of Mexico Program (GMP) maintains a database of existing data on the occurrence of mercury in the edible tissues of seafood resources harvested from the Gulf of Mexico region (<http://www.epa.gov/gmpo/mercury.html>). One valuable result of this database is revealing regional gaps in spatial coverage and data gaps for critical species.

With partial funding from the GMP, the National Marine Fisheries Service is conducting a synoptic survey of mercury in finfish harvested in the Gulf of Mexico. This survey is designed to: (1) determine if the concentrations of mercury in molluscan shellfish collected by the NOAA Mussel Watch program can be used to predict concentrations of mercury in estuarine finfish taken in the same locations; (2) determine whether there are differences in mercury concentrations between reef fish captured at natural reefs in the eastern Gulf and reef fish captured at offshore oil and gas platforms in the Northern Gulf; and (3) fill in some of the regional data gaps for pelagic species in the existing database.

**Research and Modeling:** NOAA will bring extensive research capacities and modeling expertise, both in-house and through extramural partners, to assure successful completion of the following objectives:

- ◆ Generate the data and information necessary for conducting human health and ecological risk assessments from exposure to mercury in the coastal and marine ecosystems;
- ◆ Determine specific sources, chemical form, fate and cycling of mercury;

- ♦ Build human health and ecological risk characterization, ecological forecasting, and environmental monitoring capabilities relating to source control or ecosystem management actions; and
- ♦ Evaluate and improve outreach scenarios and fish consumption advisories that inform the general public and sensitive sub-populations of risks posed by mercury levels extant in the environment.

Due to the multi-media approach (air, water and biota) of this initiative and emphasis on improving existing physical transport and food-web bioaccumulation models, this effort will involve a proper and practical representation of the complex physical, chemical and biological features, and integration of the major components into an operational model that could account for spatial and temporal variability, which has not been done to date. The effort will rely heavily on regional monitoring data (streams and rivers, oil platforms, air deposition, fish and shellfish tissue residues), as well as data and results from a number of studies on mercury levels and geochemical cycling in the Florida Everglades and at sites in the Gulf of Mexico, e.g., Lavaca Bay. The effort will work to disseminate information through NOAA's Sea Grant and other educational programs for the benefit of stakeholders, decision-makers, and the public at large.

**Regional Coordination:** It is anticipated that results from the aforementioned efforts will serve as a prototype for other regional, national and topical studies, as noted in a 2004 National Science and Technology Council (NSTC) report *Methylmercury in the Gulf of Mexico: State of Knowledge and Research Needs*. This report recommended that the GMP use the research and information priority areas identified in the report as the basis for a science and budget planning processes for the Program. Additionally, it recommended that the GMP review these needs annually and develop and update a research strategy for federal agencies to address mercury issues in the Gulf of Mexico region that would be implemented through the planning and budget processes of member agencies. Finally the report recommended that the GMP communicate and coordinate these activities with the States of Texas, Louisiana, Mississippi, Alabama, and Florida, as well as with the Gulf States Marine Fisheries Commission, the Gulf of Mexico Fishery Management Council and parallel activities outside the Gulf of Mexico region.

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**Other Federal Partners:** USGS, DHHS/FDA, DOI/USFWS

*This Federal Response Proposal represents an initial project idea from the 13 agencies represented on the Federal Workgroup, in response to the Gulf State Alliance white papers; it is meant to stimulate discussion, among the Gulf State Alliance and the Federal Workgroup, as they work toward the development of a draft Gulf Plan of Action. Implementation of this project idea is subject to further evaluation and the availability of funding.*